

WHAT IS CLAIMED IS:

1. A yarn comprising a plurality of staple fibers chosen from the group consisting of conductive staple fibers, quasi-conductive staple fibers and mixtures of conductive and quasi-conductive staple fibers, the fibers from this group making up at least about 35 percent by weight of the staple fibers in the yarn.

2. The yarn of claim 1, wherein the plurality of staple fibers from said group makes up at least about 50 percent by weight of the staple fibers in the yarn.

3. The yarn of claim 1, wherein the plurality of staple fibers from said group makes up substantially 100 percent of the staple fibers in the yarn.

4. The yarn of claim 1, wherein the plurality of staple fibers comprises at least some conductive staple fibers.

5. The yarn of claim 4, wherein the individual conductive staple fibers have a DC linear resistance less than about 10^9 ohms per centimeter.

6. The yarn of claim 5, wherein at least some of the conductive staple fibers comprise metal.

7. The yarn of claim 5, wherein at least some of the conductive staple fibers comprise non-conductive polymer and are coated with metal.

8. The yarn of claim 5, wherein at least some of the conductive staple fibers comprise carbon-loaded polymer.

9. The yarn of claim 5, wherein at least some of the conductive staple fibers comprise polymer loaded with antimony-doped tin oxide.

1 10. The yarn of claim 5, wherein at least some of the conductive staple fibers
2 comprise non-conductive polymer and are solution-coated with one or more electrically-
3 conductive polymers.

4
5 11. The yarn of claim 5, wherein at least some of the conductive staple fibers
6 comprise inherently-conductive polymer.

7
8 12. The yarn of claim 5, wherein at least some of the conductive staple fibers are
9 bicomponent staple fibers.

10
11 13. The yarn of claim 12, wherein the individual bicomponent staple fibers each
12 comprise

13 a first longitudinally-extending constituent formed of at least one fiber-forming
14 non-conductive polymer; and

15 a second longitudinally-extending constituent formed of at least one conductive
16 material,

17 wherein the second longitudinally-extending constituent is in longitudinal contact
18 with the surface of the first longitudinally-extending constituent.

19
20 14. The yarn of claim 11, wherein the second longitudinally-extending constituent
21 comprises conductive polymer.

22
23 15. The yarn of claim 12, wherein the first longitudinally-extending constituent forms
24 a core of the fiber and the second longitudinally-extending constituent forms a sheath
25 around at least part of the circumference of the core.

26
27 16. The yarn of claim 15, wherein the second longitudinally-extending constituent
28 forms a sheath around the entire circumference of the core.
29

1 17. The yarn of claim 16, wherein said bicomponent conductive staple fibers make up
2 at least about 50 percent by weight of the staple fibers in the yarn.

3
4 18. The yarn of claim 16, wherein said bicomponent conductive staple fibers make up
5 substantially 100 percent of the staple fibers in the yarn.

6
7 19. The yarn of claim 14, wherein the second longitudinally-extending constituent is
8 in the form of at least one longitudinal stripe partially encapsulated within the first
9 longitudinally-extending constituent.

10
11 20. The yarn of claim 19, wherein said bicomponent conductive staple fibers make up
12 at least about 50 percent by weight of the staple fibers in the yarn.

13
14 21. The yarn of claim 19, wherein said bicomponent conductive staple fibers make up
15 substantially 100 percent of the staple fibers in the yarn.

16
17 22. The yarn of claim 1, wherein the plurality of staple fibers comprises at least some
18 quasi-conductive staple fibers.

19
20 23. The yarn of claim 22, wherein at least some of the quasi-conductive staple fibers
21 are bicomponent staple fibers.

22
23 24. The yarn of claim 23, wherein the individual bicomponent staple fibers each
24 comprise

25 a first longitudinally-extending constituent formed of at least one fiber-forming
26 non-conductive polymer; and

27 a second longitudinally-extending constituent formed of at least one conductive
28 material,

29 wherein the second longitudinally-extending constituent is in longitudinal contact
30 with the surface of the first longitudinally-extending constituent.

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1
2 33. The fabric of claim 30, wherein the plurality of staple fibers comprises at least
3 some conductive staple fibers.

4
5 34. The fabric of claim 33, wherein the individual conductive staple fibers have a DC
6 linear resistance less than about 10^9 ohms per centimeter.

7
8 35. The fabric of claim 34, wherein at least some of the conductive staple fibers
9 comprise metal.

10
11 36. The fabric of claim 34, wherein at least some of the conductive staple fibers
12 comprise non-conductive polymer and are coated with metal.

13
14 37. The fabric of claim 34, wherein at least some of the conductive staple fibers
15 comprise carbon-loaded polymer.

16
17 38. The fabric of claim 34, wherein at least some of the conductive staple fibers
18 comprise polymer loaded with antimony-doped tin oxide.

19
20 39. The fabric of claim 34, wherein at least some of the conductive staple fibers
21 comprise non-conductive polymer solution-coated with one or more electrically-
22 conductive polymers.

23
24 40. The fabric of claim 34, wherein at least some of the conductive staple fibers
25 comprise inherently-conductive polymer.

26
27 41. The fabric of claim 34, wherein at least some of the conductive staple fibers are
28 bicomponent staple fibers.

29

1 42. The fabric of claim 41, wherein the individual bicomponent staple fibers each
2 comprise

3 a first longitudinally-extending constituent formed of at least one fiber-forming
4 non-conductive polymer; and

5 a second longitudinally-extending constituent formed of at least one conductive
6 material,

7 wherein the second longitudinally-extending constituent is in longitudinal contact
8 with the surface of the first longitudinally-extending constituent.
9

10 43. The fabric of claim 42, wherein the second longitudinally-extending constituent
11 comprises conductive polymer.
12

13 44. The fabric of claim 43, wherein the first longitudinally-extending constituent
14 forms a core of the fiber and the second longitudinally-extending constituent forms a
15 sheath around at least part of the circumference of the core.
16

17 45. The fabric of claim 44, wherein the second longitudinally-extending constituent
18 forms a sheath around the entire circumference of the core.
19

20 46. The fabric of claim 44, wherein said bicomponent conductive staple fibers make
21 up at least about 50 percent by weight of the staple fibers in those yarns in which the
22 bicomponent conductive staple fibers are incorporated.
23

24 47. The fabric of claim 44, wherein said bicomponent conductive staple fibers make
25 up substantially 100 percent of the staple fibers in those yarns in which the bicomponent
26 conductive staple fibers are incorporated.
27

28 48. The fabric of claim 43, wherein the second longitudinally-extending constituent is
29 in the form of at least one longitudinal stripe partially encapsulated within the first
30 longitudinally-extending constituent.

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1
2 49. The fabric of claim 48, wherein said bicomponent conductive staple fibers make
3 up at least about 50 percent by weight of the staple fibers in those yarns in which the
4 bicomponent conductive staple fibers are incorporated.

5
6 50. The fabric of claim 48, wherein said bicomponent conductive staple fibers make
7 up substantially 100 percent of the staple fibers in those yarns in which the bicomponent
8 conductive staple fibers are incorporated.

9
10 51. The fabric of claim 30, wherein the plurality of staple fibers comprises at least
11 some quasi-conductive staple fibers.

12
13 52. The fabric of claim 51, wherein at least some of the quasi-conductive staple fibers
14 are bicomponent staple fibers.

15
16 53. The fabric of claim 52, wherein the individual bicomponent staple fibers each
17 comprise

18 a first longitudinally-extending constituent formed of at least one fiber-forming
19 non-conductive polymer; and

20 a second longitudinally-extending constituent formed of at least one conductive
21 material,

22 wherein the second longitudinally-extending constituent is in longitudinal contact
23 with the surface of the first longitudinally-extending constituent.

24
25 54. The fabric of claim 53, wherein the second longitudinally-extending constituent
26 comprises conductive polymer.

27
28 55. The fabric of claim 54, wherein the second longitudinally-extending constituent
29 forms a core of the fiber and the first longitudinally-extending constituent forms a sheath
30 around at least part of the circumference of the core.

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1
2 56. The fabric of claim 55, wherein the first longitudinally-extending constituent
3 forms a sheath around the entire circumference of the core.
4

5 57. The fabric of claim 54, wherein said bicomponent quasi-conductive staple fibers
6 make up at least about 50 percent by weight of the staple fibers in those yarns in which
7 the quasi-conductive staple fibers are incorporated.
8

9 58. The fabric of claim 54, wherein said bicomponent quasi-conductive staple fibers
10 make up substantially 100 percent of the staple fibers in those yarns in which the quasi-
11 conductive staple fibers are incorporated.
12

13 59. A carpet comprising
14 at least one backing layer and
15 a plurality of carpet piles bonded thereto,
16 at least some of the piles or ~~at least one~~ backing layer comprising yarn that
17 comprises a plurality of staple fibers chosen from the group consisting of
18 conductive staple fibers, quasi-conductive staple fibers and mixtures of
19 conductive and quasi-conductive staple fibers, the staple fibers from this
20 group making up at least about 35 percent by weight of the staple fibers in
21 the said yarn.
22

23 60. The carpet of claim 59, wherein the plurality of staple fibers from said group
24 makes up at least 50 percent by weight of the staple fibers in the said yarn.
25

26 61. The carpet of claim 59, wherein the plurality of staple fibers from said group
27 makes up substantially 100 percent of the staple fibers the said yarn.
28

29 62. The carpet of claim 59, wherein the plurality of staple fibers comprises at least
30 some conductive staple fibers.

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1
2 63. The carpet of claim 62, wherein the individual conductive staple fibers have a DC
3 linear resistance less than about 10^9 ohms per centimeter.

4
5 64. The carpet of claim 63, wherein at least some of the conductive staple fibers
6 comprise metal.

7
8 65. The carpet of claim 63, wherein at least some of the conductive staple fibers are
9 comprise non-conductive polymer and are coated with metal.

10
11 66. The carpet of claim 63, wherein at least some of the conductive staple fibers
12 comprise carbon-loaded polymer.

13
14 67. The carpet of claim 63, wherein at least some of the conductive staple fibers
15 comprise polymer loaded with antimony-doped tin oxide.

16
17 68. The carpet of claim 63, wherein at least some of the conductive staple fibers
18 comprise non-conductive polymer and are solution-coated with one or more electrically-
19 conductive polymers.

20
21 69. The carpet of claim 63, wherein at least some of the conductive staple fibers
22 comprise inherently-conductive polymer.

23
24 70. The carpet of claim 63, wherein at least some of the conductive staple fibers are
25 bicomponent staple fibers.

26
27 71. The yarn of claim 70, wherein the individual bicomponent staple fibers each
28 comprise

29 a first longitudinally-extending constituent formed of at least one fiber-forming
30 non-conductive polymer; and

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1 a second longitudinally-extending constituent formed of at least one conductive
2 material,
3 wherein the second longitudinally-extending constituent is in longitudinal contact
4 with the surface of the first longitudinally-extending constituent.
5

6 72. The carpet of claim 71, wherein the second longitudinally-extending constituent
7 comprises conductive polymer.
8

9 73. The carpet of claim 72, wherein the first longitudinally-extending constituent
10 forms a core of the fiber and the second longitudinally-extending constituent forms a
11 sheath around at least part of the circumference of the core.
12

13 74. The carpet of claim 73, wherein the second longitudinally-extending constituent
14 forms a sheath around the entire circumference of the core.
15

16 75. The carpet of claim 74, wherein said bicomponent conductive staple fibers make
17 up at least 50 percent by weight of the staple fibers the said yarn.
18

19 76. The carpet of claim 74, wherein said bicomponent conductive staple fibers make
20 up substantially 100 percent of the staple fibers the said yarn.
21

22 77. The carpet of claim 72, wherein the second longitudinally-extending constituent is
23 in the form of at least one longitudinal stripe partially encapsulated within the first
24 longitudinally-extending constituent.
25

26 78. The carpet of claim 77, wherein said bicomponent conductive staple fibers make
27 up at least about 50 percent by weight of the staple fibers said yarn.
28

29 79. The carpet of claim 77, wherein said bicomponent conductive staple fibers make
30 up substantially 100 percent of the staple fibers said yarn.

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1 87. The carpet of claim 85, wherein said bicomponent quasi-conductive staple fibers
2 make up substantially 100 percent of the staple fibers the said yarn.

3
4 88. A fiber blend for use in antistatic yarns, the blend comprising a plurality of staple
5 fibers comprising non-conductive staple fibers and staple fibers chosen from the group
6 consisting of conductive staple fibers, quasi-conductive staple fibers and mixtures of
7 conductive and quasi-conductive staple fibers, the fibers from this group making up at
8 least about 35 percent by weight of the staple fibers in the fiber blend.

9
10 89. The fiber blend of claim 88, wherein the plurality of staple fibers comprises at
11 least some conductive staple fibers.

12
13 90. The fiber blend of claim 89, wherein the individual conductive staple fibers have a
14 DC linear resistance less than about 10^9 ohms per centimeter.

15
16 91. The fiber blend of claim 90, wherein at least some of the conductive staple fibers
17 comprise metal.

18
19 92. The fiber blend of claim 90, wherein at least some of the conductive staple fibers
20 comprise inherently-conductive polymer.

21
22 93. The fiber blend of claim 90, wherein at least some of the conductive staple fibers
23 are bicomponent staple fibers.

24
25 94. The fiber blend of claim 93, wherein the individual bicomponent staple fibers
26 each comprise

27 a first longitudinally-extending constituent formed of at least one fiber-forming
28 non-conductive polymer; and

29 a second longitudinally-extending constituent formed of at least one conductive
30 material,

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1 wherein the second longitudinally-extending constituent is in longitudinal contact
2 with the surface of the first longitudinally-extending constituent.
3

4 95. The fiber blend of claim 94, wherein the second longitudinally-extending
5 constituent comprises conductive polymer.
6

7 96. The fiber blend of claim 95, wherein the first longitudinally-extending constituent
8 forms a core of the fiber and the second longitudinally-extending constituent forms a
9 sheath around at least part of the circumference of the core.
10

11 97. The fiber blend of claim 93, wherein the second longitudinally-extending
12 constituent is in the form of at least one longitudinal stripe partially encapsulated within
13 the first longitudinally-extending constituent.
14

15 98. The fiber blend of claim 88, wherein the plurality of staple fibers comprises at
16 least some quasi-conductive staple fibers.
17

18 99. The fiber blend of claim 98, wherein at least some of the quasi-conductive staple
19 fibers are bicomponent staple fibers.
20

21 100. A fiber blend for use in antistatic yarns, the blend comprising a mixture of
22 conductive and quasi-conductive staple fibers.
23

